

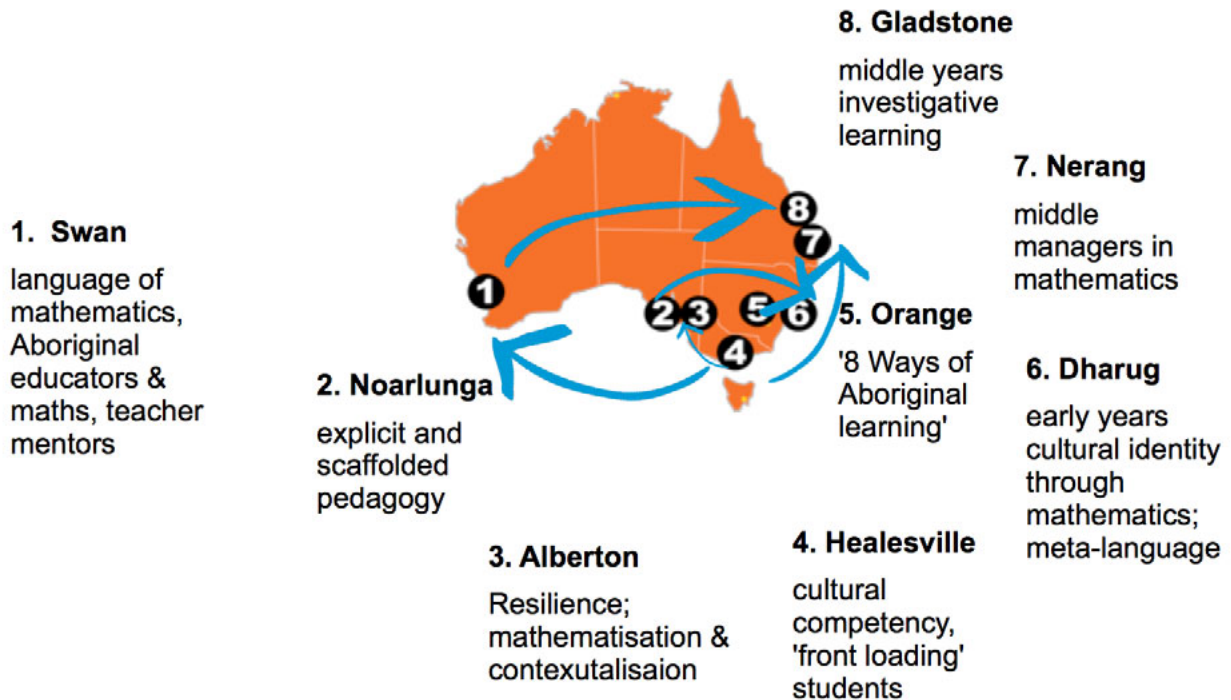
Cluster Findings

Make it Count Numeracy, mathematics and Indigenous learners

Professional Knowledge		Professional Practice			Professional Engagement	
						
Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Standard 7
						

About the Cluster Findings

The following Cluster Findings come from the eight Clusters of schools in regional and urban Australia who were a part of the *Make it Count* project 2009-2012. Each Finding derived from a wealth of evidence, experience and examples from the Clusters.



The Findings have been organised to reflect the AITSL Professional Standards for Teaching.

Professional Knowledge

1. Know Indigenous learners and know how they learn: be aware, be connected, be sensitive.
2. Know the mathematics content and know the different ways to teach it effectively to Indigenous learners: be a mathematician, be a learner, be coherent and creative.

Professional Practice

3. Plan for and implement Responsive Mathematics Pedagogy for Indigenous learners that is culturally, academically and socially inclusive: be intentional, be responsive, be effective. All students will benefit.
4. Create and maintain learning environments in which Indigenous learners feel safe and supported: be sensitive, be demanding, be supportive.
5. Develop and use tools that assess both affective and cognitive learning outcomes specific to Indigenous learners, provide feedback, and report on student learning: be constructive, be clear, be flexible.

Professional Engagement

6. Engage with colleagues in professional learning communities in ongoing, action oriented, professional learning and who are prepared to push the boundaries, move outside their comfort zone. Strive for collegial innovation in both Indigenous education and mathematics and numeracy education: be brave, be open, be collegial.
7. Engage with Indigenous parents, families and community in two-way dialogue: be a listener, be a learner, be an advocate, be a share of knowledge.

Professional Knowledge



Teachers draw on a body of professional knowledge and research to respond to the needs of their students within their educational contexts.

Teachers know their students well, including their diverse linguistic, cultural and religious backgrounds. They know how the experiences that students bring to their classroom affect their continued learning. They know how to structure their lessons to meet the physical, social and intellectual development and characteristics of their students. Teachers know the content of their subjects and curriculum. They know and understand the fundamental concepts, structure and enquiry processes relevant to the programs they teach.

Teachers understand what constitutes effective, developmentally appropriate strategies in their learning and teaching programs and use this knowledge to make the content meaningful to students. Through their teaching practice, teachers develop students' literacy and numeracy within their subject areas. They are also able to use information and communication technology to contextualise and expand their students' modes and breadth of learning (AITSL).

Standard 1



1. Know Indigenous learners and know how they learn: be aware, be connected, be sensitive.

- 1.1 Know that a sense of community and belonging is a powerful vehicle for engagement in learning.
- 1.2 Know what is significant in the daily, lived reality of learners so mathematics learning can be culturally relevant/connected as well as academically rigorous.
- 1.3 Know that learners may prefer to collaborate rather than compete in their mathematics learning.
- 1.4 Know that fostering relationships grounded in genuine care and respect are essential to engagement.
- 1.5 Know that each student is an individual and has his or her own preferences for learning.

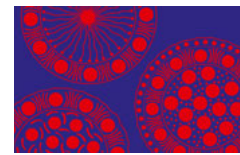
Standard 2



2. Know the mathematics content and know the different ways to teach it effectively to Indigenous learners: be a mathematician, be a learner, be coherent and creative.

- 2.1 Know that teachers and education officers must continually improve their mathematical content knowledge and pedagogical content knowledge.
- 2.2 Know the mathematics curriculum and how each mathematical concept can build on, connect with, and lead to other concepts dynamically, not necessarily vertically.
- 2.3 Know how mathematics links to contexts beyond the classroom so it can be taught through rich, life-like activities.
- 2.4 Know that as a mathematician establishing a community of practice in the classroom, your attitudes and beliefs about mathematics impact learners.

Professional Practice



Teachers are able to make learning engaging and valued. They are able to create and maintain safe, inclusive and challenging learning environments and implement fair and equitable behaviour management plans. They use sophisticated communication techniques.

Teachers have a repertoire of effective teaching strategies and use them to implement well-designed teaching programs and lessons. They regularly evaluate all aspects of their teaching practice to ensure they are meeting the learning needs of their students. They interpret and use student assessment data to diagnose barriers to learning and to challenge students to improve their performance.

They operate effectively at all stages of the teaching and learning cycle, including planning for learning and assessment, developing learning programs, teaching, assessing, providing feedback on student learning and reporting to parents/carers (AITSL).

Standard 3



3. Plan for and implement Responsive Mathematics Pedagogy for Indigenous learners that is culturally, academically and socially inclusive: be intentional, be responsive, be effective
All students will benefit.

Being Intentional

- 3.1 Design mathematical learning experiences that have family and community significance.
- 3.2 Practise explicit and scaffolded teaching with a defined and planned learning goal for each lesson that is shared with students to orient them to the learning.
- 3.3 Explicitly teach learners mathematical language and symbols so they can articulate and represent what, how and why they are learning and understanding.
- 3.4 Explicitly help learners develop and maintain positive attitudes to mathematics. Develop positive dispositions, resilience, and skills that equip learners to solve problems whatever the context.
- 3.5 Have a theoretically informed framework that enables teachers to plan authentic and meaningful learning with the flexibility to take advantage of “teachable moments”. Be aware that a research-based, locally tailored program that is flexible and responsive to local contexts and students delivers higher outcomes than imported commercial programs.

Being Responsive

- 3.6 Realise that responsive mathematics pedagogy builds on student voice, recognition of diverse ways of learning mathematics and connection to worlds beyond the classroom (both local and non-local).
- 3.7 Use kinaesthetic pedagogical practices as a point of entry to abstract mathematics knowledge.
- 3.8 Include multiple pathways and approaches to learning that allow students to investigate a range of mathematical concepts and methods and strategies.
- 3.9 Use narrative and discussion to allow students to feel personally connected to the mathematics.

Being Effective

- 3.10 Backward map the learning sequence. Begin with the outcomes and final product that will go home to parents/family/community and then backward map the process and progression of knowledge.
- 3.11 Encourage learners to represent their learning and thinking in a range of formats (eg. verbally, physically, symbolically and with technology and not just pencil and paper).
- 3.12 Stimulate a passion for mathematics in teachers by finding intersections with other fields of knowledge (e.g. the arts).
- 3.13 Recognise that the most effective practices for Indigenous students are also of benefit to all students; so avoid segregation of mathematics curriculum.

Standard 4



4. Create and maintain learning environments in which Indigenous learners feel safe and supported: Be sensitive, be demanding, be supportive.

- 4.1 Recognise that learning happens most effectively when relationships between learners and teachers are positive, and when connections between family and school are mutually supportive.
- 4.2 Hold and convey high expectations of learners – and of yourself as a teacher of Indigenous learners.
- 4.3 Remember that mastery of a skill in mathematics produces the confidence and enthusiasm to master further skills – a cycle that can be nurtured to produce exponential growth.
- 4.4 Encourage risk taking - this is an integral part of mathematics learning - in an environment that prepares students adequately for an ultimately successful outcome from risks taken.
- 4.5 Promote successful role models of learners and mathematicians, both Indigenous and non-Indigenous, to raise expectations and contribute to improving levels of student engagement and attendance.
- 4.6 Use older students as mentors for younger students as this improves the mathematical understanding of both.

Standard 5



5. Develop and use tools that assess both affective and cognitive learning outcomes specific to Indigenous learners, provide feedback, and report on student learning: Be constructive, be clear, be flexible.

- 5.1 Use a reflective planning model – plan the lesson, teach the lesson, refine the lesson. Preview the effectiveness of the learning and allow this to shape the next lesson.
- 5.2 Recognise and act on students' mathematical misconceptions.
- 5.3 Help students recognise what they know well, what they need help with and what they still need to learn.
- 5.4 Provide feedback that is timely and promotes success in future learning.

Professional Engagement



Teachers model effective learning. They identify their own learning needs and analyse, evaluate and expand their professional learning, both collegially and individually.

Teachers demonstrate respect and professionalism in all their interactions with students, colleagues, parents/carers and the community. They are sensitive to the needs of parents/carers and can communicate effectively with them about their children's learning.

Teachers value opportunities to engage with their school communities within and beyond the classroom to enrich the educational context for students. They understand the links between school, home and community in the social and intellectual development of their students.

Standard 6



6. Engage with colleagues in professional learning communities in ongoing, action oriented, professional learning and who are prepared to push the boundaries, move outside their comfort zone. Strive for collegial innovation in both Indigenous education and mathematics and numeracy education - be brave, be open, be collegial.

Engage with colleagues

- 6.1 Have a focused, structured approach to what you want to achieve as a team and establish common core values and attitudes.
- 6.2 Share expertise between schools to grow and enrich professional learning communities.
- 6.3 Be both a mentor and a learner, as the act of giving and receiving feedback establishes safe, respectful relationships conducive to critical engagement and change.
- 6.4 Participate in action learning or research where you design, act, observe and reflect. This involves examining data to determine current progress and future planning.
- 6.5 Foster the openness and courage necessary for a school to adapt diverse models to your school's unique model, based on common beliefs and values.

Engage in professional learning

- 6.6 Focus on the development of critical self-reflection so you are more able to actively challenge deficit views and assumptions you and others may have about Indigenous learners and their communities.
- 6.7 Focus on a specific area of professional learning and collaborate through professional relationships on a common goal.
- 6.8 Develop pedagogy through site-based, whole-school, collegial, data-driven professional learning that builds on a strong established research base. For teachers, lesson observation and feedback is at the heart of sharing professional knowledge.
- 6.9 Engage critically with external resources to gauge their appropriateness and relevance for Indigenous learners and compatibility with your aspirations for pedagogical improvement.

Standard 7



7. Engage with Indigenous parents, families and community in two-way dialogue: be a listener, be a learner, be an advocate, be a share of knowledge.

- 7.1 Consider Indigenous parents' own experiences in schooling and in learning mathematics, and build their confidence to talk positively with their children about mathematics reconciling past experiences with current aspirations.

- 7.2 Work with Indigenous education officers as they can be critical to building strong connections, resilience and trust between schools and their communities and families. Ensure they have a central role in curriculum development.
- 7.3 Challenge commonly held beliefs about mathematics as following a curriculum, or as culture-free. Promote mathematics as a living human endeavour that is part of the fabric of everyday life.
- 7.4 Provide the community with opportunities to have voice and ownership and make decisions about curriculum to ensure that learning experiences have family and community significance.

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